

SP-4000-85-23

APRIL 1985

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NORTHROP PRIVATE**

**NORTHROP CORPORATION  
ENVIRONMENTAL AUDIT  
ELECTRO-MECHANICAL DIVISION**

25-29 January 1985

*Conducted by:*

Northrop Services Inc. – Environmental Sciences  
Research Triangle Park, NC 27709

**NORTHROP**  
Environmental  
Sciences

Special Publication

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**NGSC46521**

## SUMMARY OF ENVIRONMENTAL AUDIT AT NORTHROP CORPORATION ELECTRO-MECHANICAL DIVISION

### I. EXECUTIVE SUMMARY

**A. Air.** Through the audit inspections and discussions, it was concluded that a number of problems exist in the maintenance of the air pollution control equipment. The posting of permit conditions and training of equipment operators should help to alleviate these problems. The 1984 emissions inventory was found to be adequately supported by purchase and usage records, although records of paint usage could be improved. Efforts have been made to reduce the emission of volatile organic compounds (VOC) to stay within limits set by the South Coast Air Quality Management District (SCAQMD). The continuation of these efforts should provide sufficient reductions to allow for plant expansion; however, SCAQMD policies must be closely tracked in this regard.

**B. Water.** The audit of water pollution control at the Electro-Mechanical Division (EMD) facility indicated, in most cases, compliance with current Federal, state, and local regulations governing surface and ground waters. All regulated wastewater discharges to the County Sanitation District were properly permitted; no discharge to surface waters was apparent, although non-point surface runoff during precipitation events is likely.

**C. Hazardous Waste and Toxic Substances.** The principal findings in the area of hazardous waste and toxic substances have to do with administration, planning, and training under the Resource Conservation and Recovery Act (RCRA) regulations. These require continuing management attention and support to assure development and implementation of required plans and documents. Other findings and observations indicate a need for supervisory and management attention to general housekeeping practices and for an ongoing inspection program for potential hazardous-problem areas.

### II. SCOPE OF AUDIT

The Northrop Corporation 1985 environmental audit was conducted by staff from Northrop Services, Inc. – Environmental Sciences (NSI-ES), Research Triangle Park, NC. The purpose of the audit was to perform a comprehensive technical assessment of Northrop manufacturing facilities with the following intentions:

- to determine/verify compliance with Federal, state, and local environmental regulations;
- to determine/verify compliance with established corporate policies and standards;  
and

- to provide assurance to management that operations are in compliance with existing environmental regulations.

The audit covered the areas of air pollution control, water pollution control, and hazardous waste management programs. Problems associated with substances such as beryllium, asbestos, and polychlorinated biphenyls were also reviewed. Topics concerning industrial hygiene were not within the scope of the audit.

The audit consisted of an introductory briefing, facility tours, interviews with environmental and operations personnel, reviews of records and correspondence, and a debriefing. NSI-ES auditors were given free access to the facilities and to Northrop personnel except for classified areas. Findings and observations made during the audit were reviewed with respect to current environmental regulations and are presented in Section III of this report. *Findings* are defined as conditions that could lead to regulatory action due to nonadherence to regulatory requirements. *Observations* are defined as conditions that may not immediately lead to regulatory action but present an environmental concern that should be either acted upon or addressed.

The audit was conducted over a relatively short period of time and is considered a "snapshot" of the environmental conditions of the facilities at the time of the review. Corrective actions may have been taken since the time the audit was performed; however, the intent here is to provide a basis for evaluating corrections and improvements in Northrop's environmental compliance status.

The audit was conducted in as thorough a manner as possible. Although some of the points and issues raised may appear minor, these minor concerns often indicate underlying technical or managerial problems that hinder full compliance to environmental regulations. An attempt was made to bring such situations into view and to provide suggestions and recommendations where possible.

### III. AUDIT RESULTS

**A. Air.** The audit of the air pollution control activities of the Electro-Mechanical Division (EMD) was conducted by B. Michael Ray and James A. Jahnke. The air audit consisted of an interview with James Watson, Administrator – Environmental Engineering; an inspection of all equipment in Buildings Y-1, Y-2, Y-12, Y-15, and Y-19 permitted by the SCAQMD; and discussions with B. Perkins, D. Burlar, R. Gutierrez, D. Hester, R. Cress, M. Shultz, D. Davis, and L. Puls of EMD.

#### 1. *Findings*

- a. One exception to the specified operating conditions was found for the Devilbiss spray paint booth (Permit M40934) in EMD facility Y-19. The conditions specify: "a gauge must

be installed to indicate, in inches of water, the static pressure differential across the exhaust filters." No such gauge was found on the unit.

- b. All permits required to be posted by SCAQMD Rule 206 were found to be posted. However, in a number of cases, the specified operating conditions were not clearly visible, a further requirement of the rule.

## 2. Observations

- a. SCAQMD Rules 203 and 204 prohibit the operation of equipment contrary to the specified permit conditions. The units were not operating at the time of audit, so technically, they were not observed to be out of compliance. However, if they were to be operated in the presence of an SCAQMD inspector, a Notice of Violation (NOV) could be issued. The following observations were made:

- (1) The permitted Devilbiss spray paint booth (Permit M40933) located in EMD Y-19 was found to have (a) four filter panels missing, and (b) the exhaust pressure gauge painted over.

These conditions are contrary to permit condition 1 that requires all exhaust air to pass through filter media and permit condition 2 that requires a measure of the static pressure differential across the filters.

- (2) The Devilbiss spray paint booth, located in EMD Y-19 (Permit M40365), was found to have posted operating instructions that contradict permit operating condition 3 that requires the use of only non-photochemically reactive solvents.
- (3) The Beattie spray paint booths located in EMD Y-12 (Permit Units 68-136 and 68-137) were found with filters caked with dry paint. In operation, no air would be able to pass through the filter, and the purpose of the devices would be defeated.
- (4) The Devilbiss spray paint booth located in EMD Y-12 (Permit Unit S01616) was found with air gaps in the filter panels, caused by improper filter installation. This again is in contradiction to the permit condition that requires all exhaust air to pass through the filtering media.
- (5) SCAQMD spray paint booth Permits M39989, M40933, M40934, M40365, S01616, and S04003 give limitations to paint usage in terms of hourly and daily rates. No usage records were found at the permitted units. It was therefore not possible to determine if these limitations were being met.

- (6) At one point during the audit, an operator was observed to be spraying outside of a spray booth, directly releasing particulate and gaseous pollutants into the air. Such a procedure circumvents the purpose of the control equipment and is contrary to Rules 203 and 204 of the SCAQMD.
- b. Air Pollution Control Equipment Maintenance. In general, it was apparent that maintenance of plant air pollution control equipment (paint spray booths, anodic room scrubbers, etc.) could be improved. Maintenance records were not found for any of the equipment, nor did a program of regular preventative maintenance appear to be established. Operator awareness of permit conditions and proper operating procedures accordingly need to be improved.
- c. Emission Inventory. The emission inventory was reviewed for accuracy and completeness. The annual usage reported in the 1984 inventory was verified for solvents, 1,1,1,-trichloroethane, diesel oil, natural gas, methy ethyl ketone, isopropyl alcohol, and kerosene. Paint, varnish, and enamel usage rates were not verified due to the difficulty in classifying the coatings listed in the purchase records. It was found that usage was estimated by adding items received during 1984 to stocks on hand at the beginning of 1984, and then subtracting stocks on hand at the end of 1984. This does not account for items stored in production or items discarded in production.

A more careful accounting of the status of materials in production could lead to a reduction in organic emissions reported in the inventory. In turn, this would result in a slight lowering of emission fees and provide extra margin for future plant expansion.

- d. Emission Credits. Usage of organic solvents and materials is constrained by the necessity to obtain additional emission credits. Nonavailability of credits and/or emission offsets can limit future plant expansion. The audit team recognized that active programs are underway in EMD to address this problem. Current emission credits available for the following listed facilities are Y-1 – 75 lb/day; Y-12 – 41 lb/day; Y-15 – 70 lb/day; and Y-19 – 23 lb/day. The credits available to Y-19 may present a problem to further expansion at that facility. However, the method of assigning of credits by SCAQMD at this time is not clear. It is not certain if the listed credits will hold in the future or if they will be reduced by a redefinition of "facility."

Programs that address this problem are

- (1) The application and use of electrostatic spray coating techniques in Y-1 and Y-12, resulting in a decrease in paint usage.

- (2) Resolving rule applicability to Hawk loader/launcher coatings. A verbal agreement with SCAQMD has been obtained to allow Rule 1124 to apply to this operation instead of Rule 1107. Since the coatings used already meet the more stringent requirements of Rule 1107, SCAQMD is to determine if credits will be allowed for the reduction from the higher 1124 limits.
  - (3) An active program of testing and evaluation of alternative coatings is in progress. Waterborne coatings and powder coating technologies are currently being evaluated. Such programs generally require a two-year period of study. There was some question as to whether the SCAQMD would allow credits for switching from solvent-borne to waterborne coatings. If credits are disallowed, alternative solutions would need to be found.
  - (4) Although paint and solvent usage records are being maintained at the production level, the audit team recommends that daily usage logs be maintained for each permitted unit. This will allow for the preparation of an accurate emissions inventory and documentation of compliance with permit usage level requirements.
- e. Emergency Episode Plan. The SCAQMD "Notice to Comply" regarding the update of the Emergency Episode Plan for stationary source curtailment has been resolved. The updated plan was submitted on 25 April 1984 and approved by SCAQMD on 10 May 1984.
  - f. A division policy pertaining to environmental control activities was not available to the audit team. Although Northrop Policy Directive No. 13 is referred to at the division level, a circulated division policy might more specifically address the concerns of EMD with regard to environmental compliance.

3. *Summary and Recommendations.* The major deficiencies observed by the audit team can be corrected by improving maintenance of the air pollution control equipment and by ensuring that production personnel are aware of operating procedures specified in SCAQMD permits. It is also recommended that production personnel maintain records of paint and solvent usage. More accurate determinations of actual use rates may improve data needed for emission inventories and for plant expansion programs.

**C. Water.** An environmental evaluation of the Electro-Mechanical Division's water control activities was conducted by B. Michael Ray and John R. Tuschall. The audit consisted of an inspection of EMD facilities, interviews with key personnel involved in water pollution control activities (Jim Watson and Dave Burlar), a property perimeter analysis for water shed runoffs, an assessment of wastewater

discharge sources (including the two pretreatment plants), and an examination of all correspondence and records concerning water pollution control.

## 1. Findings

- a. **Wastewater Flow to Orange County Sanitary District.** In several areas in the EMD facility, clean water was observed being discharged to the sewer system, either directly or indirectly, after passage through the pretreatment plant. Such discharge of clean water violates Section 203 of the County Sanitation Regulations. In one case (Building Y-12), clean water overflowed freely from rinse tanks while the process was not in use. In Building Y-1, single-pass cooling water and other clean process water flowed to the pretreatment plant and ultimately to the county sewer system. These practices are costly – both in terms of inflated water-use bills and excessive consumption of treatment chemicals.

The recommendation is to recycle clean water and stop rinse-water flow in process lines during periods of non-use.

- b. **Oil and Fuel Storage.** The total storage capacity of oil (including gasoline, waste oils, and other fuels) at EMD exceeds both 600 gal for above-ground tanks and 42,000 gal for underground tanks, and, thus, the storage tanks are regulated under 40 CFR 112 – Prevention of Oil Discharge to Surface Waters. This Federal regulation requires, among other items, a Spill Prevention Control and Countermeasure (SPCC) Plan, berms, tank contents clearly labeled on tanks, emergency control and clean-up equipment, and procedures. Two above-ground tanks that were pointed out as containing waste-cooling oil east of Building Y-1 were not labeled, not bermed, and no emergency equipment or procedures were available during the audit. None of the interviewed EMD staff was aware of an existing SPCC plan for any of the EMD storage tanks.

Pending State regulations (see Summary and Recommendations below) will likely prompt the removal of all underground tanks at EMD to preclude the extensive monitoring required for their continued use. Nonetheless, the above-ground tanks (~1500-gal capacity) currently used to store waste oil would still be regulated under 40 CFR 112 because their capacity exceeds the 600-gal limit for above-ground storage.

## 2. Observations

- a. **Pretreatment Plant.** At the time of the audit, only the pretreatment plant at Building Y-1 was in operation. However, the following observations and suggestions also apply to the proposed pretreatment plant at Building Y-12.



- (1) The quality of the maintenance and calibration program would be enhanced by formalizing operating procedures with written protocols and daily logbook entries. These procedures and records of performance would also serve as partial evidence of compliance in the event that Northrop is implicated in excursions of regulated parameters.

Further documentation of compliance would be obtained by installing a continuous recording pH meter at the discharge from the pretreatment plant(s).

- (2) Installation of covers on open tanks in pretreatment systems would prevent reported disturbances in operation caused by windblown debris.
  - (3) The records of flow rate into the pretreatment plant show uneven daily flow and, hence, likely produce fluctuating treatment efficiency. Installation of a holding/equalizer tank would alleviate the variable inflow and treatment.
  - (4) The uncontrolled dispersion and release of process water or treatment chemicals from a spill or leak in the pretreatment plan would be minimized by increasing the height of the berm around the base of the pretreatment plant.
- b. Sewage Discharge. Discharges to sewers from Building Y-12 are likely to contain pulses of regulated substances that could exceed permitted levels during some discharge periods. The observed discharges were floor rinses and overflow from process tanks in the Alodine process line.

The recommendation is to route the current waste stream to the proposed pretreatment plant to reduce the discharged concentrations of regulated substances.

### 3. Summary and Recommendations

- a. Underground Storage Tanks. Legislation pending in the State legislature indicates a strong likelihood that most underground storage tanks at the Electro-Mechanical Division will be regulated. The current draft of the regulation requires extensive (and expensive) long-term monitoring of tanks and their subsurface environment to assess each tank's integrity. The apparent labor- and cost-intensive nature of monitoring, coupled with the age and composition of the current tanks, should provide the incentive to inactivate all underground storage tanks.

It is recommended that maximum consideration be given to storing materials in above-the-ground concrete bunkers only in the future.

- b. Pretreatment Plant. Although the perimeter encompassing the pretreatment plant was bermed, the height of this containment wall did not appear adequate to prevent contamination of the immediate environment in the event one of the large holding and/or reduction tanks ruptures. It is recommended that the height of these berms be increased by 6-12 in.

**D. Hazardous Waste and Toxic Substances.** The hazardous waste audit of the Electro-Mechanical facilities was performed by Connie Turlington and John Maroney. The audit was based on a tour of the facility, examination of records, collection of policy documents and forms, and interviews with Jim Watson, Ruben Gutierrez, David Burlar, Bill Perkins, Bob Lambdin, and John Gilbert.

# **1. Findings**

## **a. Training Program**

- (1) From the beginning of 1984 to the date of audit, the formal training program required by 40 CFR 265.16 (as applied to generators storing wastes on site by 40 CFR 262.34(a)(4)) was not in place. Existing training is performed through the Occupational Health and Safety and the Training Department. The seminars do not address hazardous waste as required by the RCRA regulations.
- (2) Persons requiring training, including new personnel who must, by 40 CFR 265.16 (as applied to generators storing wastes on site by 40 CFR 262.34(a)(4)), obtain necessary training within six months of employment, are not identified. Personnel are not to work unsupervised until such training has occurred.
- (3) To document compliance with the regulatory requirements that training be conducted by a qualified person and deal with specific subjects related to the facility and the task, training plans and records should include a curriculum, including course outlines down to at least lesson topics, and résumés or curricula vitae (CVs) of the instructor(s).
- (4) A scheduling system should be used to ensure that initial training is received within the mandatory six months of employment or reassignment to hazardous waste handling duties, and that annual refresher training is administered.

Implementation of a new formal training plan will require careful monitoring to ensure that all personnel whose job descriptions call for handling of hazardous materials/wastes, or whose duties may bring them into contact with such materials, receive appropriate initial and/or recurring training before working unsupervised.

- b. **Process Storage Tank.** The waste acid storage tank (above ground) behind Building Y-12 does not have an automatic shutoff as required by 40 CFR 265.192(d), as applied to generators storing wastes on site by 40 CFR 262.34(a)(1).
- c. **Contingency Plan and Emergency Procedures.** The existing emergency procedures do not address the requirements of 40 CFR 265, Subparts C and D (§§ 265.30 -.37 and 265.50 -.56, as applied to generators storing wastes on site by 40 CFR 262.34(a)(4)). The regulations permit amendment of existing emergency plans to meet RCRA requirements.
- d. **Reports.** No record could be found of the Biennial Report required by 40 CFR 262.41. Annual reports filed for tax purposes with California do not appear to meet the requirements of this section. Inquiries to the California Department of Health Services (DOHS) and EPA Region IX indicate that the agencies have not made clear how this responsibility is to be met for California generators (producers). More information concerning this requirement has recently been published at *Env. Rep. - Ref. File* (BNA) 161:907 (25 Jan 85).

## 2. Observations

- a. **Temporary Storage Areas.** The audit team noted temporary storage facilities at Buildings Y-19 and Y-15. At Y-19, storage is inside the process plant. Only a small amount of waste is currently stored at this location, but growth in operations will present storage problems. At Y-15, storage is out of doors (one or two barrels), but the area is uncovered and has no berm.
- b. **Virgin Materials Storage Areas**
  - (1) The existing main storage area presents problems of overcrowding, improper segregation of materials, poor aisle space, and stacking. Interviews indicate that this area is to be replaced.
  - (2) The team noted at the Page Court facility that oxidizers are being stacked on wooden pallets. While this is a non-operating facility, this practice still presents a hazard.
- c. **Dumping Ground.** The earth-covered former railroad spur east and north of Y-4 was earlier used as a dumping ground for acids, and possibly other wastes. It should continue to be monitored, and plans should be made for remediation.
- d. **Overall Management Approach.** Observation of the overall management system indicates a complex and extended organizational structure. As noted above, six people were interviewed and identified as persons involved in the management and disposal of

hazardous materials and wastes. These individuals were members of three different departments.

#### 4. *Summary and Recommendations*

- a. The principal findings in the hazardous waste area have to do with administration, planning, and training under RCRA. These require continuing management attention and support to assure development and implementation of required plans and documents.
- b. Other findings and observations indicate a need for attention to housekeeping practices and ongoing inspection of potential hazardous problem areas.